



U.S. Department of Energy
Office of River Protection

P.O. Box 450
Richland, Washington 99352

02-OSR-0445

Mr. R. F. Naventi, Project Manager
Bechtel National, Inc.
3000 George Washington Way
Richland, Washington 99352

Dear Mr. Naventi:

CONTRACT NO. DE-AC27-01RV14136 - CONDITIONAL APPROVAL OF BECHTEL NATIONAL, INC. (BNI) AUTHORIZATION BASIS CHANGE NOTICE (ABCN) 24590-WTP-ABCN-ESH-01-002, REV. 1

- Reference:
1. BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Transmitted for Approval: Associated Authorization Basis Change Notice 24590-WTP-ABCN-ESH-01-002, Revision 1, 'Selection of Implementing Standard for Startup'," CCN 035791, dated July 3, 2002.
 2. ORP letter from R. J. Schepens to R. F. Naventi, BNI, "Questions on Authorization Basis Change Notice (ABCN) 24590-WTP-ABCN-ESH-01-002," 02-OSR-0414, dated September 5, 2002.

The U.S. Department of Energy, Office of River Protection (ORP) has reviewed ABCN 24590-WTP-ABCN-ESH-01-002, Rev. 1, submitted in Reference 1. The proposed changes consist of the following:

ABCN 24590-WTP-ABCN-ESH-01-020, Rev. 1, proposes changes to the Safety Requirements Document (SRD) and Integrated Safety Management Plan (ISMP). The current implementing codes and standards for the SRD requirements are contained in 24590-WTP-ISMP-ESH-01-001, *Integrated Safety Management Plan*, Sections 1.3.14, *Commissioning*, 3.14, *Commissioning and Operations*, 5.6.4, *Commissioning Review*, and 9.2, *Scheduling of Events for Regulatory Submittal*. The proposed amendment would replace these ISMP standards with the requirements of the newly selected, facility-specific standard, *Ad Hoc Implementing Standard for Startup*, for SRD Safety Criteria 6.0-1 through 6.0-5 and 9.0-3.

Based upon the ORP's evaluation of the proposed changes and responses to questions transmitted to BNI by Reference 2, the ORP found the proposed changes identified in the above ABCN conditionally acceptable, with three conditions. The three conditions are described in the attached Safety Evaluation Report.

The ORP concluded that with the wording changes and subsequent revisions to the *Ad Hoc Implementing Standard for Startup* as indicated above and in the attached Safety Evaluation Report, there is reasonable assurance that the health and safety of the public, the workers, and the environment will not be adversely affected and they comply with applicable laws, regulations, and River Protection Project Waste Treatment Plant contractual requirements.

The conditions described in the attached Safety Evaluation Report are required revisions to the ABCN text originally proposed by BNI, and subsequently agreed to in discussions between BNI and OSR staff. Once these revisions have been incorporated into the SRD and ISMP, as part of the amendment implementation process, please submit within 14 days of receipt of this letter the revised pages of the SRD, identifying all revisions to date. This amendment is effective immediately and shall be fully implemented within 30 days; i.e., the provisions of the amendment may be used immediately, and controlled copies of the SRD and subordinate documents must be modified to reflect the changes associated with this amendment.

If you have any questions, please contact me, or your staff may call Walt Pasciak, Office of Safety Regulation, (509) 373-9189.

Sincerely,

Roy J. Schepens
Manager

OSR:WJP

Attachment

**Safety Evaluation Report (SER)
of Proposed Authorization Basis Change Notice
ABCN-24590-01-002, Rev. 1
to the Safety Requirements Document and the
Integrated Safety Management Plan
for the River Protection Project-Waste Treatment Plant**

1.0 INTRODUCTION

The River Protection Project Waste Treatment Plant (RPP-WTP) authorization basis is the composite of information provided by a Contractor in response to radiological, nuclear, and process safety requirements that is the basis on which the Office of River Protection (ORP) grants permission to perform regulated activities. The authorization basis includes that information requested by the Contractor for inclusion in the authorization basis and subsequently accepted by the ORP. The authorization basis for the RPP-WTP includes the Safety Requirements Document (SRD) and the Integrated Safety Management Plan (ISMP). The SRD contains the approved set of radiological, nuclear and process safety standards and requirements, which if implemented, provide adequate protection of workers, the public, and the environment against the hazards associated with the operation of the facility. The ISMP defines a set of integrated activities that is directed toward the management or control of radiological, nuclear, and process hazards such that adequate protection is provided to workers, the public, and the environment. By letter dated July 3, 2002,¹ Bechtel National, Inc., (the Contractor) submitted a proposed amendment to the SRD and ISMP. This SER documents the ORP evaluation of the changes proposed by the Contractor in the area of Startup Testing.

The amendment proposes the following change to the SRD and ISMP: Replacement of references to sections 1.3.14, 3.14, 5.6.4, and 9.2 of the ISMP as implementing standards for Startup Testing with a reference to the newly selected implementing standard, *Ad Hoc Implementing Standard for Startup*, for SRD Safety Criteria 6.0-1 through 6.0-5 and 9.0-3.

2.0 BACKGROUND

The ISMP and SRD describe the process for identifying hazards, developing control strategies, and selecting standards for the WTP. Section 6.0 of the SRD requires establishment of a pre-operational test program for important-to-safety (ITS) structures, systems, and components (SSCs), validation of certain procedures during pre-operational testing, collection of diagnostic data/operating parameters during testing, determination of as-built operating characteristics of ITS SSCs, and performance of pre-startup safety reviews. Section 9.0-3 of the SRD requires submittal of results of pre-startup safety reviews to DOE for evaluation and use in making authorization decisions.

The current implementing codes and standards for the SRD requirements are contained in 24590-WTP-ISMP-ESH-01-001, *Integrated Safety Management Plan*, Sections 1.3.14, *Commissioning*, 3.14, *Commissioning and Operations*, 5.6.4, *Commissioning Review*, and 9.2, *Scheduling of*

¹ BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Transmittal for Approval: Authorization Basis Change Notice 24590-WTP-ABCN-ESH-01-002, Revision 1, 'Selection of Implementing Standard for Startup'," CCN 035791, dated July 3, 2002.

Events for Regulatory Submittal. The proposed amendment would replace these ISMP standards with the requirements of the newly selected, facility-specific standard, *Ad Hoc Implementing Standard for Startup*.

The Contractor reviewed a candidate set of existing, potential implementing standards and concluded no single standard fully met the requirements of SC 6.0-1 through 6.0-5 and 9.0-3. As a result, the Contractor developed a WTP-specific, ad hoc implementing standard for Startup Testing. The Contractor assessed this standard in Attachment 3 of the ABCN and confirmed that it (1) provides adequate safety, (2) complies with applicable laws and regulations, and (3) conforms to the top-level safety standards and principles. The Contractor therefore requests approval to use the new ad hoc standard for WTP startup testing.

3.0 EVALUATION

- 3.1 Proposed change to SRD SC 6.0-1: Replace the ISMP with the new *Ad Hoc Implementing Standard for Startup* for establishing and following a pre-operational testing program to demonstrate that ITS SSCs have been properly constructed and can perform their specified functions. The program shall provide for detection, tracking, and correction of deficiencies.

Evaluation (conditionally acceptable): The proposed ad hoc implementing standard describes in section 2.0 the scope of the Startup Testing program as applying to all ITS SSCs. However, in sections 3.0 and 5.0 of the ad hoc standard (Definitions and Graded Approach, respectively), the Contractor distinguishes between "acceptance tests" (system-level test performed on Safety Design Class (SDC) and Safety Design Significant (SDS) SSCs), and "functional tests" (system-level test performed on Risk Reduction Class (RRC) and non-ITS SSCs). Neither the definitions of "functional" and "acceptance" tests, nor any other sections of the proposed ad hoc standard demonstrate what SC 6.0-1 requires – that ITS SSCs have been properly constructed and can perform their specified safety functions. This is the subject of ORP question ABCN-002-01-Q-1.² In its response, the Contractor committed to revise section 5.0 to add the following sentence: "Acceptance tests performed on SDC and SDS systems and Functional tests performed on RRC systems will demonstrate that the systems have been properly constructed and can perform their safety functions."

In section 6.0, Construction Turnover, the Contractor states, "... the procedures (for the WTP test program and construction) shall include instructions for ... identification, tracking, and resolution of open items..." In section 7.0, Test Procedures, the Contractor states, "The test program administrative procedures shall provide guidance for the following test procedural elements ... reporting, and resolution of test deficiencies..." These sections clearly demonstrate the Contractor's commitment to detecting, tracking, and correcting test deficiencies.

² ORP letter from R. J. Schepens to R. F. Naventi, BNI, "Questions on Authorization Basis Change Notice (ABCN) 24590-WTP-ABCN-ESH-01-002," 02-OSR-0414, dated September 5, 2002.

Based on the above, ORP concludes the Contractor's proposed revision of the implementing standard for SC 6.0-1 to be conditionally acceptable, on the condition that section 5.0 of the ad hoc standard be revised as committed to above. Upon meeting this condition, the proposed change is not a reduction in commitment or effectiveness.

- 3.2** Proposed change to SRD SC 6.0-2: Replace the ISMP with the new *Ad Hoc Implementing Standard for Startup* for validating, as part of the pre-operational testing program, procedures for normal facility and systems operation and for functional tests to be performed during the operating phase.

Evaluation (conditionally acceptable): Section 8.0, Validation of Operating and Maintenance Procedures, of the proposed ad hoc standard states, "Approved operating and maintenance procedures shall be performed during the period between system turnover from Construction and hot commissioning testing. Procedural inadequacies discovered during this testing period will be corrected in accordance with project administrative procedures. Test program administrative procedures shall define the population of procedures to be performed." The SC makes no distinction relative to validating only a portion of all procedures for normal facility and systems operation and for functional tests to be used in the operations phase. However, the Contractor's statement in the proposed implementing standard regarding test program administrative procedures defining the population of procedures to be validated implies that not all, but some, of the subject procedures will undergo validation during pre-operational testing. This conflicts with the SC and is unacceptable. This problem was the subject of ORP's question ABCN-002-01-Q-2. In its response, the Contractor committed to revising section 8.0 in its entirety to read, "Operations procedures for the WTP will be drafted, reviewed, verified, validated, and approved per the WTP Conduct of Operations Program. Validated procedures will be provided to the testing organization for use during initial system startup and other testing activities as needed. Approved operating and maintenance procedures shall be performed as required during the period between system turnover from Construction and hot commissioning testing. Procedural inadequacies discovered during this testing period will be corrected in accordance with project administrative procedures. The approval of the operating and maintenance procedures before their performance will ensure that the procedure is compatible with the equipment or system being maintained, and that it provides sufficient and understandable guidance to the end user."

Based on the above, ORP concludes the Contractor's proposed revision of the implementing standard for SC 6.0-2 to be conditionally acceptable on the condition that the Contractor revises section 8.0 of the ad hoc standard, as discussed above. Upon meeting this condition, the proposed change is not a reduction in commitment or effectiveness.

- 3.3** Proposed change to SRD SC 6.0-3: Replace the ISMP with the new *Ad Hoc Implementing Standard for Startup* for collecting detailed diagnostic data on systems and components designated as ITS and recording the initial operating parameters of the systems and components during per-operational testing.

Evaluation (acceptable): Section 7.0 of the proposed ad hoc standard concerns Test Procedures and states that, "The test program administrative procedures shall provide guidance for the following test procedural elements ... recording of baseline data." In addition, section 13.0 of the proposed ad hoc standard states that, "Test records shall be maintained to satisfy the requirements of the QAM..." The Contractor's crediting of these sections of the proposed ad hoc standard as meeting the requirements of SRD SC 6.0-3 indicates the Contractor is interpreting the term, "baseline data" as broadly inclusive of "diagnostic data" and "operating parameters." ORP finds this interpretation to be acceptable. Also, the Contractor, in section 10.0 of the proposed ad hoc standard, commits to controlling and assuring retest of system functions repaired or modified after completion of any tests, which by sections 7.0 and 13.0, will require re-baselining and recording of diagnostic data and operational parameters. Based on the above, ORP concludes the proposed change meets SRD SC 6.0-3 and does not represent a reduction in commitment or effectiveness.

- 3.4** Proposed change to SRD SC 6.0-4: Replace the ISMP with the new *Ad Hoc Implementing Standard for Startup* for determining and documenting the as-built operating characteristics of process systems, and systems and components designated ITS. Operating points shall be adjusted to conform to values in the design basis. Training procedures and limiting conditions for operation shall be modified, if necessary, to accurately reflect the operating characteristics of the systems and components as built.

Evaluation (acceptable): Sections 4.0 and 5.0 of the proposed ad hoc standard discuss Test Phases and Graded Approach for testing, respectively. These sections delineate requirements for performing integrated tests for all ITS systems. Sections 6.0 and 7.0 of the proposed ad hoc standard discuss Construction Turnover and Test Procedures, respectively. The process and controls for system turnover from Construction to the Test organization shall include instructions for submittal of as-built documentation for the systems. Test program administrative procedures shall provide guidance for test procedure elements, including establishing test acceptance criteria, reviewing and approving test results, and recording baseline data. Section 9.0 of the proposed ad hoc standard discusses Test Acceptance Criteria and assigns the responsibility to Engineering for developing these criteria. This section also requires that uncertainties used in the accident analysis be considered for inclusion in test acceptance criteria. Because Engineering is the design authority for the WTP, they will be knowledgeable of the design bases and assure that test acceptance criteria result in operating points that conform to the design bases. Finally, section 8.0 of the proposed ad hoc standard requires validation of operating and maintenance procedures. As the Contractor notes in its evaluation of the proposed change against SRD SC 6.0-4, validation of operational and functional procedures will ensure that as-built operating characteristics are incorporated into design documentation and operating procedures and control limits. Based on the above, ORP concludes the proposed change meets SRD SC 6.0-4 and does not represent a reduction in commitment or effectiveness.

- 3.5** Proposed change to SRD SC 6.0-5: Replace the ISMP with the new *Ad Hoc Implementing Standard for Startup* for performing a pre-startup safety review. The pre-startup safety review shall confirm that, prior to the introduction of radioactive or process

chemical considered to pose a hazard to a process, construction and equipment is in accordance with design specifications; safety, operating, maintenance, and emergency procedures are in place and are adequate; a process hazard analysis has been performed and recommendations have been resolved or implemented before startup; and training of each employee involved in operating a process has been completed.

Evaluation (conditionally acceptable): Section 11.0 of the proposed ad hoc standard discusses Readiness Assessments, which is the terminology that the Contractor uses as equivalent to Pre-startup Safety Reviews. Readiness Assessments shall be performed prior to entry into cold commissioning testing (after completion of integrated water runs), and prior to entry into hot commissioning testing (at the completion of cold commissioning testing). This section of the standard includes the areas to be evaluated and/or the elements to be confirmed in the Readiness Assessments. These address the elements required in the SRD SC with one exception – "confirmation that a process hazard analysis has been performed and recommendations have been resolved or implemented before startup." This is the subject of ORP's question ABCN-002-01-Q-3.² In its response, the Contractor committed to add the following to section 11.0 of the ad hoc standard: "A process safety hazard analysis will be performed and recommendations will be resolved or implemented prior to entry into cold commissioning testing."

Based on the above, ORP concludes the Contractor's proposed revision of the implementing standard for SC 6.0-5 to be conditionally acceptable on the condition that the Contractor makes the change to section 11.0 of the ad hoc standard as committed to and described, above. Upon meeting the above condition, the proposed change is not a reduction in commitment or effectiveness.

- 3.6** Proposed change to SRD SC 9.0-3: Replace the ISMP with the new *Ad Hoc Implementing Standard for Startup* for submitting the pre-startup safety review to DOE for evaluation and in support of authorization decisions and regulatory oversight.

Evaluation (acceptable): Section 11.0 of the proposed ad hoc standard discusses Readiness Assessments, which are equivalent to Pre-startup Safety Reviews required by the SRD SC. This section states, "The results of these assessments will be submitted to DOE for evaluation and in support of authorization decisions and regulatory oversight." Based on this, ORP concludes the proposed change meets SRD SC 9.0-3 and does not represent a reduction in commitment or effectiveness.

4.0 CONCLUSION

On the basis of the considerations described above, ORP has concluded there is reasonable assurance that the health and safety of the public and the workers will not be adversely affected by the proposed changes. The proposed changes to the SRD do not constitute a reduction in commitment or effectiveness relative to Startup Testing. Accordingly, the proposed changes are acceptable and ORP approves the amendments as proposed in ABCN-24590-01-002, Revision 1 with the conditions stipulated in Sections 3.1, 3.2, and 3.5.